

ABSTRACT OF THE DISCLOSURE

Methods are provided for depositing amorphous carbon materials. In one aspect, the invention provides a method for processing a substrate including forming a dielectric material layer on a surface of the substrate, depositing an amorphous carbon layer on the dielectric material layer by introducing a processing gas comprises one or more hydrocarbon compounds and an argon carrier gas, and generating a plasma of the processing gas by applying power from a dual-frequency RF source, etching the amorphous carbon layer to form a patterned amorphous carbon layer, and etching feature definitions in the dielectric material layer corresponding to the patterned amorphous carbon layer. The amorphous carbon layer may act as an etch stop, an anti-reflective coating, or both.